TG: @Chalnaayaaar

Exercise - I (Conceptual Questions) Build Up Your Understanding

1. The function of tracheal cilia is to
(1) Pass mucus out (2) Pass mucus in
(3) Pass air out (4) Pass air in

2. Which of the following prevents collapsing of Trachea
(1) Muscles
(2) Diaphragm
(3) Ribs
(4) Cartilaginous rings

3. Simplest respiratory organ is :
(1) gills
(2) contractile vacuole
(3) skin
(4) lungs

4. Tracheal rings are :–
(1) Complete
(2) Incomplete
(3) Dorsally incomplete
(4) Lateral incomplete

5. Which one of the following has the smallest diameter ?
(1) Right primary bronchus
(2) Secondary bronchi
(3) Trachea
(4) Respiratory bronchioles

6. Match the columns

Column I		Column II	
(a)	Larynx	(p)	Lid of glottis
(b)	Trachea	(q)	Air Sac
(c)	Alveoli	(r)	Voice Box
(d)	Epiglottis	(s)	Wind Pipe
		(t)	Common Passage

(1) a—r, b—s, c—q, d—p
(2) a—t, b—s, c—p, d—q
(3) a—r, b—s, c—q, d—t
(4) a—r, b—t, c—q, d—p

7. Adam's Apple represents
(1) Arytenoid cartilage of larynx
(2) Cricoid cartilage of larynx
(3) Thyroid cartilage of larynx
(4) All the above

8. Inflammation of the lung covering causing severe chest pain is
(1) Emphysema (2) Pleurisy
(3) Asphyxia (4) Hypoxia

9. Which of the following is not a part of respiratory tract?
(1) Nasal chamber (2) Oesophagus
(3) Pharynx (4) Trachea

10. Residual air mostly occurs in
(1) Alveoli (2) Bronchus
(3) Nostrils (4) Trachea

11. The epithelium of respiratory bronchioles is:-
(1) Pseudostratified columnar
(2) Simple squamous
(3) Pseudostratified and sensory
(4) Cuboidal and columnar

12. ''Epiglottis'' is made up by :-
(1) Elastic cartilage (2) Fibrous cartilage
(3) Hyaline cartilage (4) Bony structure

13. Air is breathed through
(1) Trachea → lungs → larynx → pharynx → alveoli
(2) Nose → larynx → pharynx → bronchus → alveoli → bronchioles
(3) Nostrils → pharynx → larynx → trachea → bronchi → bronchioles → alveoli
(4) Nose → trachea → larynx → bronchi → pharynx → alveoli

14. Lungs are covered by
(1) Perichondrium
(2) Pleural sac
(3) Pericardium
(4) Peristomium

15. Which one of the following statement is correct?
(1) Chest expands because air enters into the lungs
(2) Air enters into the lungs because chest expands
(3) The muscles of the diaphragm contracts because air enters into the lungs
(4) All of the above statements are correct

16. After deep inspiration, capacity of maximum expiration of lung is called :-
(1) Total lung capacity
(2) Functional residual capacity
(3) Vital capacity
(4) Inspiratory capacity

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17. Which statement is correct ?
(1) Pulmonary ventilation is equal to alveolar ventilation.
(2) Pulmonary ventilation is less than alveolar ventilation.
(3) Alveolar ventilation is more than Pulmonary ventilation.
(4) Alveolar ventilation is less than Pulmonary ventilation.

18. About 1500 ml of air left in lungs is called
(1) Tidal volume
(2) Inspiratory reserve volume
(3) Residual volume
(4) Vital capacity

19. At high altitude, RBC of human blood will
(1) Increase in number
(2) Decrease in number
(3) Decrease in size
(4) Increase in size

20. Which one has the lowest value?
(1) Tidal volume
(2) Vital capacity
(3) Inspiratory reserve volume
(4) Expiratory reserve volume

21. Volume of air inspired or expired with each normal breath is known as
(1) Inspiratory capacity
(2) Total lung capacity
(3) Tidal volume
(4) Residual volume

22. Total lung capacity is
(1) One lit (2) 3 lit (3) 6 lit (4) 8 lit

23. Air that remains in lung after most powerful expiration is
(1) Inspiratory air (2) Dead space air
(3) Tidal air (4) Residual air

24. During normal respiration without any effort the volume of air inspired or expired is called
(1) Tidal volume
(2) Inspiratory volume
(3) Residual volume
(4) Expiratory reserve volume

25. Total lung capacity is :-
(1) total volume of air accommodated in lungs at the end of forced inspiration
(2) RV + ERV + TV + IRV
(3) vital capacity + residual volume
(4) All of the above

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26. Which instrument helps in clinical assessment of pulmonary volumes?
(1) Sphygmomanometer
(2) Stethoscope
(3) Spirometer
(4) Electrocardiograph

27. Volume of air remains in the lungs after normal expiration is
(1) ERV + RV (2) IRV + RV
(3) RV + IRV + ERV (4) TV

28. Which of the following volume is not included in vital capacity?
(1) ERV (2) TV (3) IRV (4) RV

29. The Upper region of Pharynx in human is called :-
(1) Oropharynx (2) Nasopharynx
(3) Laryngopharynx (4) None of these

30. What is correct ?
(1) Pulmonary ventilation is equal to alveolar ventilation.
(2) Alveolar ventilation is less than pulmonary ventilation.
(3) Alveolar ventilation is more than pulmonary ventilation.
(4) Both are variable.

31. Similarity between the trachea of cockroach and man is that
(1) Both are paired and branched
(2) Ciliated epithelium is present in both
(3) Walls of both can not be deformed/non collapsible walls
(4) In both head originates from pharynx.

32. Friction on the lungs surface reduces by
(1) double layered pleura
(2) single layered pleura
(3) ribs covering lungs
(4) mucous membrane surrounding the lungs.

33. In lungs, air is separated from venous blood by-
(1) Squamous epithelium + tunica externa of blood vessel
(2) Squamous epithelium + endothelium of blood vessel
(3) Transitional epithelium + tunica media of blood vessel
(4) Columnar epithelium + 3 layered wall of blood vessel.

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34. In lung, gaseous exchange is done by :-
(1) Simple diffusion
(2) Active transport
(3) Passive transport
(4) facilitated diffusion

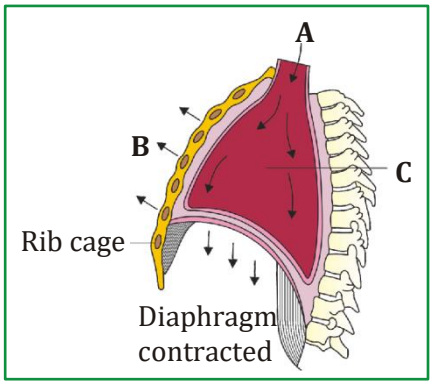
35. Which of the following statements is **not true**?
(1) The partial pressure of O_2 in deoxygenated blood is 40 mm Hg.
(2) The partial pressure of O_2 in oxygenated blood is 95 mm Hg
(3) The partial pressure of O_2 in alveolar air is 104 mm Hg
(4) The partial pressure of CO_2 in alveolar air is 45 mm Hg

36. Partial pressure of oxygen in alveoli, atmospheric air and tissue will be
(1) 40, 159, 45 (2) 40, 0.3, 45
(3) 104, 159, 40 (4) 104, 0.3, 45

37. What will be the P_{O_2} and P_{CO_2} in the atmospheric air compared to those in the alveolar air?
(1) P_{O_2} lesser, P_{CO_2} higher
(2) P_{O_2} higher, P_{CO_2} lesser
(3) P_{O_2} higher, P_{CO_2} higher
(4) P_{O_2} lesser, P_{CO_2} lesser

38. Partial pressure of CO_2 is higher :-
(1) At alveolar level (2) At tissue level
(3) In atmosphere (4) In oxygenated blood

39. In the given diagram, identify what is depicted by A, B and C.
Choose the correct option.



(1) A-Air going out from lungs, B-Ribs and sternum relaxed, C-volume of thorax increased
(2) A-Air entering lungs, B-Ribs and sternum relaxed, C-volume of thorax increased
(3) A-Air entering lungs, B-Ribs and sternum raised, C-volume of thorax increased
(4) A -Air going out from lungs, B-Ribs and sternum relaxed, C-volume of thorax decreased

40. Almost same pO_2 in humans is found in
(1) alveoli and tissues
(2) oxygenated blood and deoxygenated blood
(3) alveoli and oxygenated blood
(4) alveoli and deoxygenated blood

41. Exchange of gases in lung alveoli occurs through
(1) Active transport (2) Osmosis
(3) Simple diffusion (4) Passive transport

42. Arrange the following in the order if increasing volume
(i) Tidal volume
(ii) Residual volume
(iii) Expiratory reserve volume
(iv) Vital capacity
(1) (i) < (ii) < (iii) < (iv)
(2) (i) < (iii) < (ii) < (iv)
(3) (i) < (iv) < (iii) < (ii)
(4) (i) < (iv) < (ii) < (iii)

43. Under normal condition 100 ml blood deliver ____ to tissue.
(1) 4 ml O_2 (2) 10 ml O_2
(3) 5 ml O_2 (4) 25 ml O_2

44. Haldane effect is due to
(1) CO_2 (2) Lactic acid
(3) pH (4) Oxyheamoglobin

45. What percentage of CO_2 flows in blood in form of bicarbonates?
(1) 7% (2) 23% (3) 50% (4) 70%

46. Effect of CO_2 concentration on dissociation of oxyhaemoglobin is called
(1) Bohr's effect (2) Haldane effect
(3) Hamburger effect (4) Root effect

47. Chloride shift for the transport of
(1) O_2 (2) CO_2 (3) CO (4) O_3

48. Exchange of bicarbonates and chloride ions between RBC and plasma is called:-
(1) Chloride shift.
(2) Bohr's effect.
(3) Haldane's effect.
(4) Intra cellular respiration.

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49. Determination of oxygen carried by haemoglobin is done by
(1) pH
(2) Partial pressure of oxygen
(3) Partial pressure of carbon dioxide
(4) All the above

50. For proper transport of O_2 and CO_2 blood should be
(1) Slightly acidic (2) Strongly acidic
(3) Strongly alkaline (4) Slightly alkaline

51. What would happen when blood is acidic?
(1) Binding of oxygen with haemoglobin increases
(2) Red blood corpuscles are formed in higher number
(3) Binding of oxygen with haemoglobin decreases
(4) There is no change in oxygen binding nor number of RBC

52. The chloride shift is movement of Cl^-
(1) From plasma to RBC
(2) From WBC to plasma
(3) From RBC to plasma
(4) From plasma to WBC

53. Chloride shift occurs in respond to :
(1) H^+ (2) K^+ (3) HCO_3^- (4) Na^+

54. What happen to the O_2 dissociation curve of Hb if pH is decreased ?
(1) shift to left
(2) shift to right
(3) remain unchanged
(4) will oscillate erratically

55. Dissociation curve shifts to the right when:-
(1) CO_2 concentration decreases
(2) CO_2 concentration increases
(3) O_2 concentration increases
(4) H^+ concentration decreases

56. Oxyhaemoglobin acts as
(1) Alkali (2) Acid
(3) Neutral (4) Buffer

57. The oxygen- Haemoglobin dissociation curve will show a right shift in case of :-
(1) Less H^+ concentration
(2) High partial pressure of O_2
(3) Low partial pressure of CO_2
(4) High 2,3, B.P.G.

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58. Which of the following conditions are found in the alveoli of lungs :
I. high PO_2 II. low PCO_2
III. high PCO_2 IV. low PO_2
V. low H^+ VI. High H^+
Choose the correct option.
(1) I, III and V (2) III, IV and VI
(3) I, IV and VI (4) I, II and V

59. Binding of CO_2 to oxyhaemoglobin occurs when
(1) pCO_2 is high and pO_2 is less in tissue
(2) pCO_2 is low and pO_2 is high in tissue
(3) pCO_2 is low and pO_2 is low in tissue
(4) pCO_2 is high and pO_2 is high in tissue

60. In Bohr's effect curve shift to right when :-
(1) pCO_2 decreases and p50 O_2 increases
(2) pCO_2 increases and p50 O_2 decreases
(3) pCO_2 increases and p50 O_2 increases
(4) pCO_2 increases and p50 O_2 decreases and pH increases

61. In which three forms CO_2 is transported by blood
(1) As a solution, Carbamino compounds, bicarbonates
(2) As a solution, Carbamino proteins, $KHCO_3$
(3) As a solution, Carbamino haemoglobin, $NaHCO_3$
(4) As a solution, Carbamino compound, H_2CO_3

62. H. Hb is
(1) H_2b
(2) Heavy hydrogen bond
(3) Reduced bromide
(4) Haemoglobin acid

63. The human ribs
(1) Are accessory respiratory organs
(2) Do not help in breathing
(3) Are main respiratory organs
(4) Are not respiratory organs

64. During transport of CO_2 blood does not become acidic due to
(1) Neutralisation of H_2CO_3 by Na_2CO_3
(2) Absorption by leucocytes
(3) Blood buffers
(4) Non-accumulation

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65. "Emphysema" is a condition in which -
(1) Reparatory centre inhibited
(2) Lot of fluid in the lungs
(3) The walls separating the alveoli break
(4) Lungs have more O_2

66. Rate of respiration is directly affected by
(1) CO_2 concentration
(2) O_2 in trachea
(3) Concentration of O_2
(4) Diaphragm expansion

67. CO is more toxic than CO_2 because it :
(1) Damages lungs
(2) It destroys haemoglobin
(3) Affects the nervous system
(4) Reduces the oxygen carrying capacity of haemoglobin

68. Carbon monoxide has greater affinity for Haemoglobin as compare to oxygen :-
(1) 1000 Times (2) 200 Times
(3) 20 Times (4) 2 Times

69. About 97% of oxygen is transported by RBC remaining 3% is :-
(1) Dissolved in plasma & transported
(2) Retained in lungs
(3) Attached to cell membranes
(4) Found inside mitochondria

70. Increased asthmatic attacks in certain seasons are related to :-
(1) Hot and humid environment
(2) Eating fruits preserved in tin containers
(3) Inhalation of seasonal pollen
(4) Low temperature

71. Disease aggravated by pollution is :-
(1) Haemophilia
(2) Rheumatism
(3) Scurvy
(4) Bronchitis

72. Column I represents diseases and column II represents their symptoms. Which of the following pairs are correct match for them:-

Column I	**Column II**
(P) Asthma	(i) Damaged alveolar walls
(Q) Emphysema	(ii) Accumulation of W.B.C. in alveolus
(R) Pneumonia	(iii) Allergy

(1) P–iii, Q–ii, R–i
(2) P–iii, Q–i, R–ii
(3) P–ii, Q–iii, R–i
(4) P–ii, Q–i, R–iii

EXERCISE-I (Conceptual Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	1	4	3	3	4	1	3	2	2	1	2	1	3	2	2
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	3	4	3	1	1	3	3	4	1	4	3	1	4	2	2
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	3	1	2	1	4	3	2	2	3	3	3	2	3	4	4
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	1	2	1	4	4	3	1	3	2	2	2	4	4	1	2
Question	61	62	63	64	65	66	67	68	69	70	71	72			
Answer	3	4	4	3	3	1	4	2	1	3	4	2			

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Exercise - II (Previous Year Questions) AIPMT/NEET

AIPMT 2006

1. Which one of the following statements is **incorrect** ?
(1) The residual air in lungs slightly decreases the efficiency of respiration in mammals
(2) The presence of non–respiratory air sacs, increases the efficiency of respiration in birds
(3) In insects, circulating body fluids serve to distribute oxygen to tissues
(4) The principle of counter current flow facilitates efficient respiration in gills of fishes

2. The majority of carbon dioxide produced by our body cells is transported to the lungs –
(1) Dissolved in the blood
(2) As bicarbonates
(3) As carbonates
(4) Attached to haemoglobin

3. Bowman's glands are found in –
(1) Olfactory epithelium
(2) External auditory canal
(3) Cortical nephrons only
(4) Juxtamedullary nephrons

AIPMT 2007

4. Bowman's glands are located in the :-
(1) Olfactory epithelium of our nose
(2) Proximal end of uriniferous tubules
(3) Anterior pituitary
(4) Female reproductive system of cockroach

AIPMT 2008

5. What is vital capacity of our lungs ?
(1) inspiratory reserve volume plus expiratory reserve volume
(2) total lung capacity minus residual volume
(3) inspiratory reserve volume plus tidal volume
(4) total lung capacity minus expiratory reserve volume

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AIPMT-Pre 2010

6. Listed below are four respiratory capacities (a-d) and four jumbled respiratory volumes of a normal human adult :

	Respiratory capacities	Respiratory volumes
(a)	Residual volume	2500 mL
(b)	Vital capacity	3500 mL
(c)	Inspiratory reserve volume	1200 mL
(d)	Inspiratory capacity	4500 mL

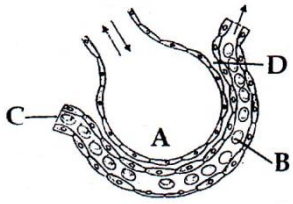
Which one of the following is the **correct** matching *of* two capacities and volumes ?
(1) (a) 4500 mL, (b) 3500 mL
(2) (b) 2500 mL, (c) 4500 mL
(3) (c) 1200 mL, (d) 2500 mL
(4) (d) 3500 mL, (a) 1200 mL

7. What is true about RBCs in humans ?
(1) They do not carry CO_2 at all
(2) They carry about 20-25 per cent of CO_2
(3) They transport 99.5 per cent of O_2
(4) They transport about 80 percent oxygen only and the rest 20 per cent of it is transported in dissolved state in blood plasma.

AIPMT-Pre 2011

8. Two friends are eating together on a dining table. One of them suddenly starts coughing while swallowing some food. This coughing would have been due to improper movement of-
(1) Epiglottis (2) Diaphragm
(3) Neck (4) Tongue

9. The figure given below shows a small part of human lung where exchange of gases takes place. In which one of the options given below, the one part, A, B, C or D is correctly identified along with its function



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Options :

(1) C : arterial capillary-passes oxygen to tissues

(2) A : alveolar cavity-main site of exchange of respiratory gases

(3) D : Capillary wall-exchange of O_2 and CO_2 takes place here

(4) B : red blood cell-transport of CO_2 mainly

10. A large proportion of oxygen is left unused in the human blood even after its uptake by the body tissues. This O_2 :

(1) Acts as a reserve during muscular exercise

(2) Raises the pCO_2 of blood to 75 mm of Hg.

(3) Is enough to keep oxyhaemoglobin saturation at 96%

(4) Helps in releasing more O_2 to the epithelial tissues

AIPMT-Mains 2011

11. Bulk of carbon dioxide (CO_2) released from body tissues into the blood is present as :

(1) Carbamino-haemoglobin in RBCs

(2) Bicarbonate in blood plasma and RBCs

(3) Free CO_2 in blood plasma

(4) 70% carbamino-haemoglobin and 30% as bicarbonate

AIPMT-Pre 2012

12. Which one of the following is the correct statement for respiration in humans ?

(1) Workers in grinding and stone-breaking industries may suffer, from lung fibrosis

(2) Abut 90% of carbon dioxide (CO_2) is carried by haemoglobin as carbamino haemoglobin

(3) Cigarette smoking may lead to inflammation of bronchi

(4) Neural signals from pneumotaxic centre in pons region of brain can increase the duration of inspiration

13. People who have migrated from the planes to an area adjoining Rohtang pass about six months back:

(1) suffer from altitude sickness with symptoms like nausea, fatigue, etc.

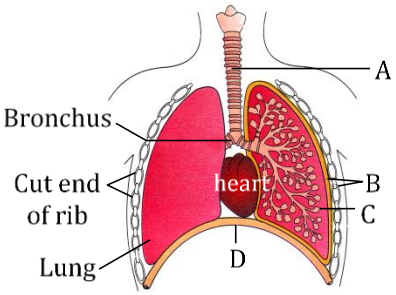
(2) have the usual RBC count but their haemoglobin has very high binding affinity to O_2

(3) have more RBCs and their haemoglobin has a lower binding affinity to O_2

(4) are not physically fit to play games like football.

NEET-UG 2013

14. The figure shows a diagrammatic view of human respiratory system with labels A, B, C and D. Select the option which gives correct identification and main function and/or characteristic :-



(1) **D** – Lower end of lungs – diaphragm pulls it down during inspiration

(2) **A** – trachea - long tube supported by complete cartilaginous rings for conducting inspired air

(3) **B** – pleural membrane - surround ribs on both sides to provide cushion against rubbing

(4) **C** – Alveoli - thin walled vascular bag like structures for exchange of gases

AIPMT 2014

15. Approximately seventy percent of carbon-dioxide absorbed by the blood will be transported to the lungs:

(1) as bicarbonate ions

(2) in the form of dissolved gas molecules

(3) by binding to R.B.C.

(4) as carbamino - haemoglobin

TG: @Chalnaayaaar

AIPMT 2015

16. When you hold your breath, which of the following gas changes in blood would first lead to the urge to breathe?
(1) rising CO_2 concentration
(2) falling CO_2 concentration
(3) rising CO_2 and falling O_2 concentration
(4) falling O_2 concentration

NEET-I 2016

17. Asthma may be attributed to :
(1) bacterial infection of the lungs
(2) allergic reaction of the mast cells in the lungs
(3) inflammation of the trachea
(4) accumulation of fluid in the lungs

NEET-II 2016

18. The partial pressure of oxygen in the alveoli of the lungs is :-
(1) Less than that in the blood
(2) Less than that of carbon dioxide
(3) Equal to that in the blood
(4) More than that in the blood

19. Lungs do not collapse between breaths and some air always remains in the lungs which can never be expelled because :-
(1) There is a positive intrapleural pressure
(2) Pressure in the lungs is higher than the atmospheric pressure.
(3) There is a negative pressure in the lungs.
(4) There is a negative intrapleural pressure pulling at the lung walls

NEET (UG) 2017

20. Lungs are made up of air-filled sacs, the alveoli. They do not collapse even after forceful expiration, because of:
(1) Inspiratory Reserve Volume
(2) Tidal Volume
(3) Expiratory Reserve Volume
(4) Residual Volume

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NEET(UG) 2018

21. Which of the following options correctly represents the lung conditions in asthma and emphysema, respectively ?
(1) Inflammation of bronchioles; Decreased respiratory surface
(2) Increased number of bronchioles; Increased respiratory surface
(3) Increased respiratory surface; Inflammation of bronchioles
(4) Decreased respiratory surface; Inflammation of bronchioles

22. Match the items given Column I with those in Column II and select the ***correct*** option given below :

Column-I	**Column-II**
a. Tidal volume	i. 2500-3000 mL
b. Inspiratory Reserve volume	ii. 1100-1200 mL
c. Expiratory Reserve volume	iii. 500-550 mL
d. Residual volume	iv. 1000-1100 mL

	a	**b**	**c**	**d**
(1)	iii	ii	i	iv
(2)	iii	i	iv	ii
(3)	iii	iv	ii	iii
(4)	iv	iii	ii	i

23. Which of the following is an occupational respiratory disorder ?
(1) Anthracis
(2) Silicosis
(3) Botulism
(4) Emphysema

NEET (UG) 2019

24. Tidal Volume and Expiratory Reserve Volume of an athlete is 500 mL and 1000 mL respectively. What will be his Expiratory Capacity if the Residual Volume is 1200 mL?
(1) 1500 mL
(2) 1700 mL
(3) 2200 mL
(4) 2700 mL

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NEET (UG) 2019 (ODISHA)

25. Select the correct statement.
(1) Expiration occurs due to external intercostal muscles
(2) Intrapulmonary pressure is lower than the atmospheric pressure during inspiration.
(3) Inspiration occurs when atmospheric pressure is less than intrapulmonary pressure.
(4) Expiration is initiated due to contraction of diaphragm.

26. The maximum volume of air a person can breathe in after a forced expiration is known as:
(1) Expiratory Capacity
(2) Vital Capacity
(3) Inspiratory Capacity
(4) Total lung Capacity

NEET (UG) 2020

27. Identify the wrong statement with reference to transport of oxygen.
(1) Low pCO_2 in alveoli favours the formation of oxyhaemoglobin.
(2) Binding of oxygen with haemoglobin is mainly related to partial pressure of O_2.
(3) Partial pressure of CO_2 can interfere with O_2 binding with haemoglobin.
(4) Higher H^+ conc. in alveoli favours the formation of oxyhaemoglobin.

28. Select the correct events that occur during inspiration.
(a) Contraction of diaphragm
(b) Contraction of external inter-costal muscles
(c) Pulmonary volume decreases
(d) Intra pulmonary pressure increases
(1) only (d)
(2) (a) and (b)
(3) (c) and (d)
(4) (a), (b) and (d)

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NEET (UG) 2020 (COVID-19)

29. The Total Lung Capacity (TLC) is the total volume of air accommodated in the lungs at the end of a forced inspiration. This includes :
(1) RV; IC (Inspiratory Capacity); EC (Expiratory Capacity); and ERV
(2) RV; ERV; IC and EC
(3) RV; ERV; VC (Vital Capacity) and FRC (Functional Residual Capacity)
(4) RV (Residual Volume); ERV (Expiratory Reserve Volume); TV (Tidal Volume); and IRV (Inspiratory Reserve Volume)

30. Match the following columns and select the correct option :

	Column-I		Column-II
(a)	Pneumotaxic Centre	(i)	Alveoli
(b)	O_2 Dissociation	(ii)	Pons region of brain
(c)	Carbonic Anhydrase	(iii)	Haemoglobin
(d)	Primary site of exchange of gases	(iv)	R.B.C.

(1) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)
(2) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
(3) (a)-(iii), (b)-(ii), (c)-(iv), (d)-(i)
(4) (a)-(iv), (b)-(i), (c)-(iii), (d)-(ii)

NEET (UG) 2021

31. The partial pressures (in mm Hg) of oxygen (O_2) and carbon dioxide (CO_2) at alveoli (the site of diffusion) are :
(1) $pO_2 = 104$ and $pCO_2 = 40$
(2) $pO_2 = 40$ and $pCO_2 = 45$
(3) $pO_2 = 95$ and $pCO_2 = 40$
(4) $pO_2 = 159$ and $pCO_2 = 0.3$

32. Select the favourable conditions required for the formation of oxyhaemoglobin at the alveoli.

(1) High pO_2, low pCO_2, less H^+, lower temperature

(2) Low pO_2, high pCO_2, more H^+, higher temperature

(3) High pO_2, high pCO_2, less H^+, higher temperature

(4) Low pO_2, low pCO_2, more H^+, higher temperature

NEET (UG) 2022

33. Which of the following is **not** the function of conducting part of respiratory system ?

(1) Inhaled air is humidified

(2) Temperature of inhaled air is brought to body temperature

(3) Provides surface for diffusion of O_2 and CO_2

(4) It clears inhaled air from foreign particles

34. Under normal physiological conditions in human being every 100 ml of oxygenated blood can deliver _____ml of O_2 to the tissues.

(1) 5ml (2) 4 ml

(3) 10 ml (4) 2 ml

35. Which of the following statements are correct with respect to vital capacity?

(a) It includes ERV, TV and IRV

(b) Total volume of air a person can inspire after a normal expiration

(c) The maximum volume of air a person can breathe in after forced expiration

(d) It includes ERV, RV and IRV.

(e) The maximum volume of air a person can breath out after a forced inspiration.

Choose the **most appropriate answer** from the options given below:

(1) (b), (d) and (e) (2) (a), (c) and (d)

(3) (a), (c) and (e) (4) (a) and (e)

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	3	2	1	1	2	4	2	1	2	1	2	1	3	4	1
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	1	2	4	4	4	1	2	2	1	2	2	4	2	4	2
Question	31	32	33	34	35										
Answer	1	1	3	1	3										

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Exercise - III Master Your Understanding

EXERCISE-III (A) (NCERT BASED QUESTIONS)

1. Which is a common passage for food and air?
(1) Trachea (2) Oesophagus
(3) Pharynx (4) Glottis

2. The function of conducting part in respiratory system of human is :-
(1) Clears foreign particles.
(2) Humidifies atmospheric air
(3) Brings the air to body temperature
(4) All of the above

3. When there is no air in initial bronchioles, they does not collapse. it is due to :-
(1) Presence of Lecithin
(2) Presence of incomplete cartilaginous rings
(3) Presence of complete cartilaginous rings
(4) Presence of mucous

4. Which of the following steps not involved in respiration?
(1) Diffusion of gases across alveolar membrane
(2) Transport of gases by the blood
(3) Provide nutrients to all the living cells of body
(4) Utilisation of O_2 by the cells for catabolic reactions and resultant release of CO_2.

5. Inspiration can occur, when –
(1) Pressure within the lungs is less than the atmospheric pressure.
(2) Pressure within the lungs is more than the atmospheric pressure.
(3) Pressure within the lungs and atmospheric air is same.
(4) No effect of pressure on inspiration.

6. By the contraction in diaphragm volume of thoracic chamber increases in the :-
(1) Dorso-ventral axis
(2) Antero-posterior axis
(3) Dorso-posterior axis
(4) Antero-ventral axis

7. The primary muscle of inspiration is :-
(1) Diaphragm
(2) Intercostal muscle
(3) Abdominal muscle
(4) Oblique muscle

8. Total volume of air a person can expire after normal inspiration is :-
(1) Vital capacity
(2) Functional residual capacity
(3) Inspiratory capacity
(4) Expiratory capacity

9. Which of the following factor can affect the rate of diffusion of gases?
(1) Thickness of the membranes involved in diffusion
(2) Solubility of the gases
(3) Pressure of the gases
(4) All of these

10. Which of the following is correct?

	Alveoli	Deoxy genated blood	Tissue
(1)	PO_2=159mmHg	PCO_2=40mmHg	PCO_2=20 mmHg
(2)	PCO_2=40mmHg	PO_2=95mmHg	PO_2=40mmHg
(3)	PO_2=104mmHg	PCO_2=45mmHg	PCO_2=45mmHg
(4)	PO_2=40mmHg	PO_2=40mmHg	PCO_2=45mmHg

11. What is true about diffusion capacity.
(1) Diffusion capacity of CO_2 is much higher than O_2
(2) Diffusion capacity of O_2 is much higher than CO_2
(3) Diffusion capacity of O_2 and CO_2 is same
(4) None of the above

12. Which of the following statement **is true**?
(1) 20-25 percent CO_2 is transported by RBCs.
(2) 97 percent O_2 is transported by RBCs.
(3) 70 percent CO_2 is carried as bicarbonate.
(4) All of these are true.

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13. Binding of oxygen with haemoglobin is primarily related to :-
(1) Partial pressure of O_2
(2) Partial pressure of CO_2
(3) H^+ ion concentration
(4) Temperature

14. In which the following factors can interfere in binding of O_2 with haemoglobin.
A- P_{CO_2}
B-H^+ ion concentration
C-Temperature
(1) Only A (2) B, C
(3) A and C (4) A, B, C

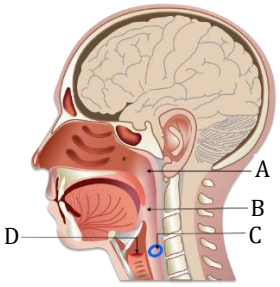
15. The conditions which are favourable for the formation of oxyhaemoglobin :-
(1) $PO_2\uparrow$, $PCO_2\uparrow$, H^+conc.$\downarrow$, Temperature$\downarrow$
(2) $PO_2\downarrow$, $PCO_2\downarrow$, H^+conc.$\uparrow$, Temperature$\uparrow$
(3) $PO_2\uparrow$, $PCO_2\downarrow$, H^+conc.$\downarrow$, Temperature$\downarrow$
(4) $PO_2\uparrow$, $PCO_2\uparrow$, H^+conc.$\downarrow$, Temperature$\uparrow$

16. Which of the following statement/s is/are correct?
A. A high concentration of carbonic anhydrase is present in RBC.
B. Minute quantities of carbonic anhydrase is present in plasma.
C. Every 100 ml blood delivers approximately 4 ml of CO_2 to the alveoli.
D. 20-25% CO_2 is carried by haemoglobin as carbaminohaemoglobin.
(1) A, C and D (2) A and D
(3) A, B, C and D (4) Only A

17. Which of the following statement is incorrect?
(1) Among vertebrates, fishes use gills whereas amphibians, reptiles, birds and mammals respire through lungs.
(2) Mechanisms of breathing vary among different groups of animals depending mainly on their habitats and levels of organisation.
(3) Lower invertebrates like sponges, coelenterates, flatworms, etc., exchange O_2 with CO_2 by osmosis over their entire body surface.
(4) Earthworms use their moist cuticle and insects have a network of tubes (tracheal tubes) to transport atmospheric air within the body

18. A chemo sensitive area is situated adjacent to respiratory rhythm centre. Which is highly sensitive to____ and _____ions.
(1) O_2, H^+ (2) CO_2, OH^-
(3) CO_2, H^+ (4) CO_2, O_2

19. Label A, B, C and D in the diagram given below



(1) A–Nasopharynx, B–Oropharynx, C–Glottis, D–Gullet
(2) A–Nasopharynx, B–Oropharynx, C–Gullet, D–Glottis
(3) A–Oropharynx, B–Nasopharynx, C–Gullet, D–Glottis
(4) A–Oropharynx, B–Nasopharynx, C–Glottis, D–Gullet

20. Chronic disorder in which alveolar wall are damaged due to which respiratory surface is decreased. One of the major causes of this is cigarette smoking :-
(1) Asthma (2) Emphysema
(3) Bronchitis (4) Fibrosis

21. What is the correct about alveoli?
(1) Thin, irregular-walled and vascularised bag-like structures
(2) Thick, irregular-walled and vascularised bag-like structures
(3) Thin, regular-walled and vascularised bag-like structures
(4) Thick, regular-walled and vascularised bag-like structures

22. Total volume of air accommodate in the lungs at the end of forced inspiration :-
(1) TV + IRV
(2) TV + IRV + ERV
(3) TV + ERV
(4) TV + IRV + ERV + RV

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23. Mark the true statement among the following with reference to normal breathing
(1) Inspiration is a passive process where as expiration is active
(2) Inspiration is a active process where as expiration is passive
(3) Inspiration and expiration are active processes
(4) Inspiration and expiration are passive processes

24. A person breathes in some volume of air by forced inspiration after having a forced expiration. This quantity of air taken in is
(1) Total lung capacity
(2) Tidal volume
(3) Vital capacity
(4) Inspiratory capacity

25. Mark the correct pair of muscles involved in the normal breathing in humans :-
(1) External and internal intercostal muscles
(2) Diaphragm and abdominal muscles
(3) Diaphragm and external intercostal muscles
(4) Diaphragm and internal intercostal muscles

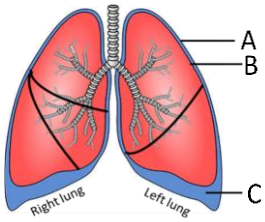
26. The diffusion membrane is made up of three major layers namely.
(1) the thin squamous epithelium of alveoli, the endothelium of alveolar capillaries and the basement substance in between them
(2) the thick squamous epithelium of alveoli, the endothelium of alveolar capillaries and the basement substance in between them
(3) the thin columnar epithelium of alveoli, the endothelium of alveolar capillaries and the basement substance in between them
(4) the thin columnar and cuboidal epithelium of alveoli, the endothelium of alveolar capillaries and the basement substance in between them

27. Which of the following group of animals, is used Lungs for respiration ?
(1) Fishes, Frog, Tadpole larva
(2) Fish, Mollusca, aquatic arthropods
(3) Reptiles, Birds, Mammals
(4) Insects, Earthworm, Mollusca

EXERCISE-III (B) (ANALYTICAL QUESTIONS)

28. Whether a child died after normal birth or died before birth can be confirmed by measuring –
(1) tidal volume of air
(2) residual volume of air
(3) the weight of the child
(4) the dead space air

29. Find the correct option for the diagram given below –



(1) A–Parietal pleura, B–Visceral pleura, C–Pleural cavity filled with pleural fluid
(2) A–Visceral pleura, B–Parietal pleura, C–Pleural cavity filled with pleural fluid
(3) A–Parietal pericardium, B–Visceral pericardium, C–Pleural cavity filled with pleural fluid
(4) A–Visceral pericardium, B–Parietal pericardium, C–Pleural cavity filled with pleural fluid

30. Which of the following statement is correct?
(1) Alveoli are the primary sites of exchange of gases
(2) Exchange of gases occur at tissue level and alveolar surface.
(3) Pressure contributed by an individual gas in a mixture of gases is called partial pressure and is represented as pO_2 for oxygen and pCO_2 for carbon dioxide.
(4) All of the above.

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31. Identify A, B and C in the given sentence
Inspiration is initiated by ____A____of diaphragm which ____B____the volume of thoracic chamber in ____C____axis.
(1) A–relaxation, B–increases, C–antero posterior axis
(2) A–contraction, B–decreases, C–antero posterior axis
(3) A–contraction, B–increases, C–antero posterior axis
(4) A–relaxation, B–contraction, C–antero posterior axis

32. In Lungs there is definite exchange of ions between RBC and Plasma. Removal of CO_2 from blood involves –
(1) efflux of Cl^- ions from RBC
(2) influx of Cl^- ions into RBC.
(3) influx of HCI_3^- ions into Plasma.
(4) efflux of HCI_3^- ions from RBC.

33. The chloride content of RBC will be higher than that of plasma in :-
(1) Systemic arteries and pulmonary veins
(2) Systemic veins and pulmonary arteries
(3) Systemic arteries and pulmonary arteries
(4) Systemic veins and pulmonary veins

34. Which of the following lung volumes or capacities can be measured by spirometer?
(1) Functional residual capacity [FRC]
(2) Residual volume
(3) Total lung capacity [TLC]
(4) Vital capacity

35. Which of the following statement is incorrect?
(1) A healthy man can inspire or expire approximately 6000 to 8000 ml of air per second.
(2) Total volume of air that can accommodated in the lungs at the end of forced inspiration is called total lung capacity.
(3) Total volume of air a person can expire after a normal inspiration is called expiratory capacity.
(4) Amount of air remain in lungs even after deep and forceful expiration is called residual volume of air.

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36. The respiratory membranes facilitates the exchange of respiratory gases through diffusion. Oxygen enters the deoxygenated blood through diffusion because :-
(1) Partial pressure of oxygen in alveolar air and capillaries is 40 mm Hg and 100 mm Hg respectively
(2) Partial pressure of oxygen in alveolar air and capillaries is 100 mm Hg and 40 mm Hg respectively
(3) Partial pressure of oxygen in alveolar air and capillaries is 46 mm Hg and 40mm Hg respectively
(4) Partial pressure of oxygen in alveolar air and capillaries it 40 mm Hg and 46 mm Hg respectively

37. Blood do not become acidic although it carries CO_2 because :-
(1) CO_2 is continuously diffused through tissues
(2) CO_2 combines with H_2O to form HCO_3
(3) In CO_2 transport, buffers plays an important role
(4) CO_2 is absorbed by WBC

38. The amount of CO_2 that can diffuse through the diffusion membrane per unit difference in partial pressure is much higher compared to that of O_2. Why?
(1) because diffusion of gases takes place only at alveoli
(2) because the solubility of CO_2 is 20-25 times lesser than that of O_2
(3) because the solubility of CO_2 is 20-25 times higher than that of O_2
(4) because alveoli are very large in number

39. Find out the correct match from the following table:-

	Column I	Column II	Column III
(i)	At tissue level	Po_2 = 40 mm Hg	Pco_2 = 45 mm Hg
(ii)	In pulmonary vein	Po_2 = 95 mm Hg	Pco_2 = 50 mm Hg
(iii)	In systemic artery	Po_2 = 40 mm Hg	Pco_2 = 40 mm Hg
(iv)	In alveoli	Po_2 = 104 mm Hg	Pco_2 = 40 mm Hg

(1) Both (i) and (ii) (2) Both (iii) and (iv)
(3) (i), (ii) and (iii) (4) Both (i) and (iv)

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40. Match the following columns.

Column I		Column II	
A	Inspiratory capacity (IC)	1	Total air, a person can inspire after normal expiration
B	Expiratory capacity (EC)	2	Maximal volume of the air, a person can breath in after a forced expiration
C	Functional residual capacity (FRC)	3	Volume of the air that will remain in lungs after a normal expiration
D	Vital capacity (VC)	4	Total volume of air a person can expire after a normal inspiration

Codes :-

	A	B	C	D
(1)	1	2	3	4
(2)	1	4	3	2
(3)	1	4	2	3
(4)	4	1	3	2

41. Which of the following option gives correct information about the coverings of thoracic cage on various surfaces :-

	Anterior surface	Posterior surface	Dorsal surface
(1)	Sternum and Ribs	Ribs	Diaphragm
(2)	Sternum and Ribs	Diaphragm	Clavicle bones and neck
(3)	Sternum and Ribs	Vertebral column	Clavicle bones and neck
(4)	Clavicle bones and neck	Diaphragm	Vertebral column

42. Considering the following labels for mentioned structures and select the correct sequence of their arrangement :-

A = Terminal bronchiole
B = Respiratory bronchiole
C = Tertiary bronchi
D = Primary bronchi
E = Secondary bronchi
F = Total pulmonary bronchioles

(1) D ⟶ E ⟶ C ⟶ F ⟶ A ⟶ B
(2) A ⟶ B ⟶ D ⟶ E ⟶ C ⟶ F
(3) C ⟶ F ⟶ A ⟶ B ⟶ D ⟶ E
(4) D ⟶ E ⟶ F ⟶ C ⟶ B ⟶ A

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43. Consider the following four statements (a-d) and select the option which includes all the correct ones only :-

(a) All the time of inspiration, contraction in diaphragm and external intercostal muscles take place.
(b) Normal breathing is also called as abdominal breathing.
(c) Expiration during sneezing, coughing, yoga is normal expiration during which IICM and abdominal muscles relax.
(d) Inspiration can occur if the pressure within lungs (intra pulmonary pressure) is more then the atmospheric pressure.

(1) Statements (a), (b), (c), (d)
(2) Statements (a) only
(3) Statements (a), (b), (c)
(4) Statements (a) and (b)

44. Find out the **correct** match from the following table:-

	Column-I	Column-II	Column-III
(i)	Tidal volume (TV)	(EC - ERV)	500 ml
(ii)	Expiratory reserve volume (ERV)	(VC - IRV - TV)	3000 ml
(iii)	Vital capacity (VQ	IRV + ERV + RV	4500 ml
(iv)	Residual volume (RV)	FRC - ERV	1200 ml

(1) (i) and (ii) (2) (i), (iii) and (iv)
(3) (i), (ii) and (iii) (4) (i) and (iv)

45. Find out the **correct** match from the following:

(i) Larynx – sound box
(ii) Trachea – complete cartilaginous rings
(iii) Epiglottis – elastic cartilaginous flap
(iv) Alveoli – very thin, irregular walled, vascularised bag like structures
(v) Pleural fluid – reduces friction on the lung surface

(1) (i), (ii), (iii), (iv), (v)
(2) (i), (iii), (iv), (v)
(3) (i), (iii), (v)
(4) (i) and (v)

46. Which of the following statement is **not correct**?

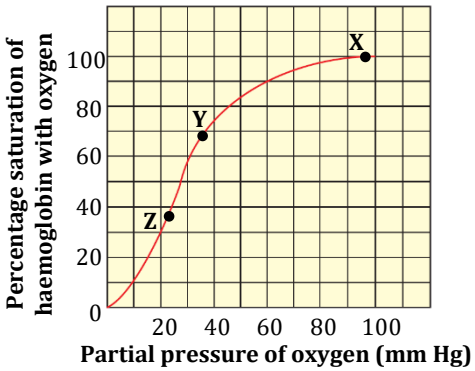
(1) Formation of oxyhaemoglobin is a process of oxidation.

(2) Every 100 ml of oxygenated blood can deliver around 5 ml of O_2 to tissue under physiological condition.

(3) Dissociation curve is curve between percentage saturation of Hb with oxygen and partial pressure of oxygen.

(4) High concentration of CO_2 activates dissociation of oxyhaemoglobin is called Bohr's effect.

47. Given below graph shows an oxygen dissociation curve :-



Where in the body will haemoglobin be saturation at the percentage shown at points X, Y and Z.

(1) X-Pulmonary artery, Y-Pulmonary vein, Z-Carotid artery

(2) X-Systemic artery, Y-Pulmonary artery, Z-Pulmonary vein

(3) X-Pulmonary vein, Y-Systemic vein, Z-Systemic vein during exercise

(4) X-Left ventricle, Y-Right ventricle, Z-Systemic artery

Exercise - III ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	3	4	2	3	1	2	1	4	4	3	1	4	1	4	3
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	3	3	3	2	2	1	4	2	3	3	1	3	2	1	4
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	3	1	2	1	1	2	4	2	2	4	4	4	4	4	1
Question	46	47													
Answer	2	3													

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